

## **ABSTRACT**

A birdcage coil for use with a magnetic resonance (MR) system comprises a first ring at one thereof, a second ring at the other end thereof, and a plurality of rods electrically interconnecting the first and second rings. The first ring is electrically conductive and has a first diameter. The  
5 second ring is electrically conductive and has a second diameter. The rods and first and second rings are configured to form about the birdcage coil a plurality of partially-overlapped primary resonant substructures. Each primary resonant substructure includes two of the rods and the corresponding sections of the first and second rings interconnecting them.